

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Leland Jorgensen Examiner #: 78942 Date: 10/14/03  
Art Unit: 2675 Phone Number 30 5-2650 Serial Number: 091874,128  
Mail Box and Bldg/Room Location: \_\_\_\_\_ Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): \_\_\_\_\_

Earliest Priority Filing Date: \_\_\_\_\_

*\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

\*\*\*\*\*  
STAFF USE ONLY

	Type of Search	Vendors and cost where applicable
Searcher: <u>Vamshi Katukuntla</u>	NA Sequence (#) _____	STN _____
Searcher Phone #: <u>703 306 0256</u>	AA Sequence (#) _____	Dialog _____
Searcher Location: <u>PK2 3003</u>	Structure (#) _____	Questel/Orbit _____
Date Searcher Picked Up: <u>11/18/03</u>	Bibliographic _____	Dr.Link _____
Date Completed: <u>11/19/03</u>	Litigation _____	Lexis/Nexis _____
Searcher Prep & Review Time: <u>180</u>	Fulltext <input checked="" type="checkbox"/>	Sequence Systems _____
Clerical Prep Time: _____	Patent Family _____	WWW/Internet _____
Online Time: <u>200</u>	Other _____	Other (specify) _____

File 348:EUROPEAN PATENTS 1978-2003/Nov W02.

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File 349:PCT FULLTEXT 1979-2002/UB=20031113,UT=20031106

(c) 2003 WIPO/Univentio

? ds

Set	Items	Description
S1	3136	OLED OR ORGANIC(W) (LED OR LIGHT()EMIT?() (DEVICE? ? OR DIOD- E? ?) OR ELECTROLUMINESC? OR ELECTRO()LUMINESC? OR EL)
S2	159818	WHITE
S3	1319067	BETTER OR EFFICIEN? OR EFFECTIVE OR HIGHER OR LOWER OR MORE OR LESS OR GREATER OR LESSER OR (SAVE OR SAVES OR SAVING) (3N- ) (POWER OR ELECTRICITY OR ENERGY OR CHARGE OR BATTERY?)
S4	319345	(COLOR OR COLOUR OR RED OR GREEN OR BLUE OR RED()BLUE()GRE- EN OR RGB)
S5	69	S1(S)S2(S)S3(S)S4
S6	1	S1(S) (S2(5W)S3(5W)S4)
S7	20	S1(S)S2(5N)S3(5N)S4 NOT S6
S8	20	IDPAT (sorted in duplicate/non-duplicate order)
S9	20	IDPAT (primary/non-duplicate records only)

6/3,K/1 (Item 1 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
(c) 2003 European Patent Office. All rts. reserv.

01543232

White organic light-emitting devices with improved efficiency  
Weisses Licht emittierende Vorrichtung mit verbessertem Wirkungsgrad  
Dispositif d'emission de lumiere blanche avec un rendement ameliore  
PATENT ASSIGNEE:

EASTMAN KODAK COMPANY, (201212), 343 State Street, Rochester, New York  
14650, (US), (Applicant designated States: all)

INVENTOR:

Hatwar, Tukaram Kisan, c/o Eastman Kodak Company, 343 State Street,  
Rochester, New York 14650-2201, (US)

LEGAL REPRESENTATIVE:

Weber, Etienne Nicolas et al (91684), Kodak Industrie, Departement  
Brevets, CRT, Zone Industrielle, 71102 Chalon sur Saone Cedex, (FR)  
PATENT (CC, No, Kind, Date): EP 1286569 A1 030226 (Basic)

APPLICATION (CC, No, Date): EP 2002078223 020805;

PRIORITY (CC, No, Date): US 930050 010815

DESIGNATED STATES: DE; FR; GB

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: H05B-033/14; H05B-033/22; H05B-033/28

ABSTRACT WORD COUNT: 144

NOTE:

Figure number on first page: 3

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200309	440
SPEC A	(English)	200309	6104
Total word count - document A			6544
Total word count - document B			0
Total word count - documents A + B			6544

...SPECIFICATION green portion was absent in the spectra of device 2. The device 3 overall has white color emission but with much higher luminance yield of that device 2. Thus, it was possible to produce white color with increased efficiency by green dopant in the Alq electron transport layer. The individual contribution of each of the color is particularly important, if white OLED light is used in combination with the R, G, B color filters to produce a full color OLED device. In turn, the individual R, G, B contributions to the full color OLED can be engineered by using the present invention.

Comparative Example 4

Device 4 was prepared...

9/3,K/1 (Item 1 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
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01624311

Organic electroluminescent device having stacked electroluminescent units  
Organische elektrolumineszente Anordnung mit gestapelten  
elektrolumineszenten Elementen  
Dispositif electroluminescent organique comportant des elements  
electroluminescents empiles

PATENT ASSIGNEE:

EASTMAN KODAK COMPANY, (201212), 343 State Street, Rochester, New York  
14650, (US), (Applicant designated States: all)

INVENTOR:

Liao, Liang-Sheng L., c/o Eastman Kodak Company, 343 State Street,  
Rochester, New York 14650-2201, (US)  
Tang, Ching Wan, c/o Eastman Kodak Company, 343 State Street, Rochester,  
New York 14650-2201, (US)

LEGAL REPRESENTATIVE:

Weber, Etienne Nicolas et al (91684), Kodak Industrie, Departement  
Brevets, CRT, Zone Industrielle, 71102 Chalon sur Saone Cedex, (FR)  
PATENT (CC, No, Kind, Date): EP 1339112 A2 030827 (Basic)  
APPLICATION (CC, No, Date): EP 2003075309 030203;  
PRIORITY (CC, No, Date): US 77270 020215  
DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR;  
HU; IE; IT; LI; LU; MC; NL; PT; SE; SI; SK; TR  
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO  
INTERNATIONAL PATENT CLASS: H01L-051/20  
ABSTRACT WORD COUNT: 87

NOTE:

Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200335	339
SPEC A	(English)	200335	11969
Total word count - document A			12308
Total word count - document B			0
Total word count - documents A + B			12308

...SPECIFICATION and less costly to fabricate.

Another advantage of the present invention is that the stacked OLED can have a new way to adjust the emission color of the device by mixing appropriate organic electroluminescent units with different color emissions.

Another advantage of the present invention is that high efficiency white electroluminescence can be produced.

Another advantage of the present invention is that the stacked OLED... or lifetimes. A few non-limiting examples are discussed below.

White-Emitting Devices

By using RGB stacks, this invention enables white light generation at greatly improved efficiency and operational lifetime compared to OLED devices of the prior art. One application for this improved white light-producing, stacked OLED is in general purpose or area lighting, where high luminance originated from a large surface...

...cathode 240 and anode 210 of the lamp via electrical conductors 260. In this example, organic EL unit 220.1 emits blue light, organic EL

unit 220.2 emits green light, and **organic EL** unit 220.3 emits red light. The intensity and exact hue of light emission from each **organic EL** unit is chosen so that they combine to yield white light, or nearly white light...

...230.1 and 230.2 are as defined previously. There are many other combinations of **organic EL** units that can be used to yield light that appears white. For example, two-layer...

9/3,K/2 (Item 2 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
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01590527

**Organic semiconductor element**  
**Organisches Halbleiterelement**  
**Dispositif semiconducteur organique**  
PATENT ASSIGNEE:

SEL SEMICONDUCTOR ENERGY LABORATORY CO., LTD., (577861), 398 Hase, Atsugi-shi, Kanagawa-ken 243-0036, (JP), (Applicant designated States: all)

INVENTOR:

Tetsuo, Tsutsui, 8-66, Momijigaoka-Higashi, Kasuga-shi, Fukuoka-ken 816-0833, (JP)  
Hiroko, Yamazaki, Semicond. Energy Lab. Co., Ltd., 398, Hase, Atsugi-shi, Kanagawa-ken, 243-0036, (JP)  
Satoshi, Seo, Semicond. Energy Lab. Co., Ltd., 398, Hase, Atsugi-shi, Kanagawa-ken, 243-0036, (JP)

LEGAL REPRESENTATIVE:

Grunecker, Kinkeldey, Stockmair & Schwanhauser Anwaltssozietat (100721), Maximilianstrasse 58, 80538 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1318553 A2 030611 (Basic)

APPLICATION (CC, No, Date): EP 2002027513 021205;

PRIORITY (CC, No, Date): JP 2001370980 011205

DESIGNATED STATES: AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE; SI; SK; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO

INTERNATIONAL PATENT CLASS: H01L-051/20

ABSTRACT WORD COUNT: 111

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200324	2736
SPEC A	(English)	200324	10306
Total word count - document A			13042
Total word count - document B			0
Total word count - documents A + B			13042

...SPECIFICATION impossible to do such innovations as mixing the light emission from the upper and the **lower organic EL** elements to produce the **white color** light.

For example, a technique using transparent ITO cathodes for both the anode and the...

9/3,K/3 (Item 3 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS  
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01478339

**ORGANIC ELECTROLUMINESCENT ELEMENT**  
**ORGANISCHES ELEKTROLUMINESCENTES ELEMENT**  
**ELEMENT ELECTROLUMINESCENT ORGANIQUE**

**PATENT ASSIGNEE:**

IDEMITSU KOSAN CO., LTD., (420826), 1-1, Marunouchi 3-chome, Chiyoda-ku,  
Tokyo 100-8321, (JP), (Applicant designated States: all)

**INVENTOR:**

IKEDA, Hidetsugu, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
ARAI, Hiromasa, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
FUNAHASHI, Masakazu, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
HOSOKAWA, Chishio, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)

**LEGAL REPRESENTATIVE:**

Gille Hrabal Struck Neidlein Prop Roos (100973), Patentanwalte,  
Brucknerstrasse 20, 40593 Dusseldorf, (DE)

PATENT (CC, No, Kind, Date): EP 1333018 A1 030806 (Basic)

WO 2002038524 020516

APPLICATION (CC, No, Date): EP 2001979006 011105; WO 2001JP9659 011105

PRIORITY (CC, No, Date): JP 2000339938 001108

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

INTERNATIONAL PATENT CLASS: C07C-015/20; C07C-015/56; C07D-333/16;

C09K-011/06; H05B-033/14

ABSTRACT WORD COUNT: 128

**NOTE:**

Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; Japanese  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200332	2714
SPEC A	(English)	200332	13571
Total word count - document A			16285
Total word count - document B			0
Total word count - documents A + B			16285

...SPECIFICATION the life caused by quenching can be prevented by the multi-layer structure of the **organic EL**. Where necessary, light emitting materials, other doping materials, hole injecting materials and electron injecting materials may be used in combination. By using other doping materials, the luminance and the **efficiency** of light emission can be improved and **red** light and **white** light can be emitted. The hole injecting layer, the light emitting layer and the electron...

9/3,K/4 (Item 4 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS  
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01434635

**Organic light emitting device**  
**Organische lichtemittierende Vorrichtung**  
**Dispositif organique emetteur de lumiere**

**PATENT ASSIGNEE:**

Sanyo Electric Co., Ltd., (2206454), 5-5, Keihanondori 2-chome,  
Moriguchi-shi, Osaka-fu 570-8677, (JP), (Applicant designated States:  
all)

INVENTOR:

Fujii, Hiroyuki, c/o Sanyo Electric Co., Ltd, 2-5-5, Keiinhondori,  
Moriguchi-shi, Osaka 570-8677, (JP)

LEGAL REPRESENTATIVE:

Calderbank, Thomas Roger et al (50122), MEWBURN ELLIS York House 23  
Kingsway, London WC2B 6HP, (GB)

PATENT (CC, No, Kind, Date): EP 1215945 A2 020619 (Basic)

APPLICATION (CC, No, Date): EP 2001310369 011212;

PRIORITY (CC, No, Date): JP 2000379404 001213

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: H05B-033/14; C09K-011/06; H01L-051/20

ABSTRACT WORD COUNT: 69

NOTE:

Figure number on first page: 1

LANGUAGE (Publication, Procedural, Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200225	1225
SPEC A	(English)	200225	9384
Total word count - document A			10609
Total word count - document B			0
Total word count - documents A + B			10609

...SPECIFICATION is superior to others.

In general, while it is comparatively easy to realize highly efficient **organic light emitting devices** which emit **green** light, it is difficult to realize those which emit **red** light. It is **more** difficult to realize **organic light emitting devices** which emit **blue** light and **white** light.

Requirements are now made for light emitting devices emitting blue light and white light...a formula (10) shown below.

In the above DCJTB, it becomes possible to achieve excellent **red** emission of a spectral component at excellent luminous **efficiency**. This makes it possible to obtain **white** emission at excellent luminous **efficiency** in the **organic light emitting device** by mixing the red emission of DCJTB, the blue emission of the molecular substance and

...the luminescent substance with a uniform thickness without use of any detrimental organic solvent.

The **organic light emitting device** may further include a luminescent layer provided between the anode and the cathode, and the luminescent layer may include a luminescent substance. In the **organic light emitting device** having such structure, **blue** light or **white** light can be obtained at excellent luminous **efficiency**.

The foregoing and other objects, features, aspects and advantages of the present invention will become...described above, it is possible in the mixture luminescent layer 5 of the above described **organic EL** device 100 to obtain blue light emission of TCTA, green light emission of Ir(ppy) and **red** light emission of DCJTB at excellent luminous **efficiency**. Thus, it becomes possible in such mixture luminescent layer 5 to realize **white** light emission at excellent luminous **efficiency** by mixing of respective lights emitted from TCTA, Ir(ppy) and DCJTB. This makes it possible to obtain white light emission at excellent luminous **efficiency** in the **organic EL** device 100.

By the way, TCTA which is a principal component of the mixture luminescent...

9/3,K/5 (Item 5 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
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01427126

NOVEL ARYLAMINE COMPOUNDS AND ORGANIC ELECTROLUMINESCENT DEVICES  
NEUE ARYLAMIN-VERBINDUNGEN UND ORGANISCHE ELEKTROLUMINESZENTE VORRICHTUNGEN  
NOUVEAUX COMPOSES D'ARYLAMINE ET DISPOSITIFS ELECTROLUMINESCENTS ORGANIQUES  
PATENT ASSIGNEE:

IDEMITSU KOSAN CO., LTD., (420826), 1-1, Marunouchi 3-chome, Chiyoda-ku,  
Tokyo 100-8321, (JP), (Applicant designated States: all)

INVENTOR:

HOSOKAWA, Chishio, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)

FUNAHASHI, Masakazu, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)

LEGAL REPRESENTATIVE:

Gille Hrabal Struck Neidlein Prop Roos (100973), Patentanwalte,  
Brucknerstrasse 20, 40593 Dusseldorf, (DE)

PATENT (CC, No, Kind, Date): EP 1219590 A1 020703 (Basic)

WO 200220460 020314

APPLICATION (CC, No, Date): EP 2001961205 010830; WO 2001JP7477 010830

PRIORITY (CC, No, Date): JP 2000268833 000905

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: C07C-211/61; C07C-225/22; C09K-011/06;

H05B-033/14; H05B-033/22

ABSTRACT WORD COUNT: 163

LANGUAGE (Publication,Procedural,Application): English; English; Japanese  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200227	605
SPEC A	(English)	200227	7670
Total word count - document A			8275
Total word count - document B			0
Total word count - documents A + B			8275

...SPECIFICATION and more preferably in a concentration of 50 to 100% by weight.

By forming the **organic EL** device in a multi- ...materials may be used in combination. By using other doping materials, the luminance and the **efficiency** of the light emission can be improved and **red** light or **white** light can be emitted. The hole injecting layer, the light emitting layer and the electron...

9/3,K/6 (Item 6 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
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01427050

STYRYL COMPOUNDS AND ORGANIC ELECTROLUMINESCENT DEVICES  
STYRYLVERBINDUNGEN UND ELEKTROLUMINESZENTE VORRICHTUNGEN  
COMPOSES DE STYRYLE ET DISPOSITIFS ELECTROLUMINESCENTS ORGANIQUES  
PATENT ASSIGNEE:

IDEMITSU KOSAN CO., LTD., (420826), 1-1, Marunouchi 3-chome, Chiyoda-ku,  
Tokyo 100-8321, (JP), (Applicant designated States: all)

INVENTOR:



FUNAHASHI, Masakazu, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
ARAI, Hiromasa, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
HOSOKAWA, Chishio, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)

LEGAL REPRESENTATIVE:

Gille Hrabal Struck Neidlein Prop Roos (100971), Patentanwalt

Brucknerstrasse 20, 40593 Dusseldorf, (DE)

PATENT (CC, No, Kind, Date): EP 1314715 A1 030528 (Basic)

WO 2002020459 020314

APPLICATION (CC, No, Date): EP 2001958497 010827; WO 2001JP7295 010827

PRIORITY (CC, No, Date): JP 2000265544 000901

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: C07C-211/54; C07C-211/58; C07C-211/61;

C07C-217/94; C09K-011/06; H05B-033/14

ABSTRACT WORD COUNT: 183

NOTE:

Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; Japanese

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200322	745
SPEC A	(English)	200322	5653
Total word count - document A			6398
Total word count - document B			0
Total word count - documents A + B			6398

...SPECIFICATION and more preferably in a concentration of 1 to 10% by weight.

By forming the **organic EL** device in a multi-layer structure, decreases in the luminance and the life due to...

...materials may be used in combination. By using other doping materials, the luminance and the **efficiency** of the light emission can be improved and **red** light or **white** light can be emitted. The hole injecting layer, the light emitting layer and the electron...

9/3,K/7 (Item 7 from file: 348)

DIALOG(R)File 348:EUROPEAN PATENTS

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01403127

**White organic electroluminescent devices with improved stability and efficiency**

**Weiss ausstrahlende organische Elektrolumineszenzvorrichtung mit verbessertem Wirkungsgrad und verbesserter Stabilitat**

**Dispositif electroluminescent emettant de la lumiere blanche avec efficacite et stabilite ameliorees**

PATENT ASSIGNEE:

EASTMAN KODAK COMPANY, (201212), 343 State Street, Rochester, New York 14650, (US), (Applicant designated States: all)

INVENTOR:

Hatwar, Tukaram K., Eastman Kodak Company, 343 State Street, Rochester, New York 14650-2201, (US)

LEGAL REPRESENTATIVE:

Weber, Etienne Nicolas et al (91684), Kodak Industrie, Departement Brevets, CRT, Zone Industrielle, 71102 Chalon sur Saone Cedex, (FR)

PATENT (CC, No, Kind, Date): EP 1187235 A2 020313 (Basic)

APPLICATION (CC, No, Date): EP 2001203130 010817;  
PRIORITY (CC, No, Date): US 651624 000830  
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR  
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI  
INTERNATIONAL PATENT CLASS: H01L-051/20  
ABSTRACT WORD COUNT: 142  
NOTE:

Figure number on first page: 5

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200211	439
SPEC A	(English)	200211	5877
Total word count - document A			6316
Total word count - document B			0
Total word count - documents A + B			6316

...SPECIFICATION rubrene concentration was increased from 0 to 5% in the hole transport NPB layer. The **blue** emission layer consists of 1.5% TBP doped in the ADN host. **White** color with CIE coordinates (0.33, 0.38) is obtained with luminance **efficiency** **greater** than 4.2 cd/A @20 mA/cm<sup>2</sup>) when the rubrene concentration is about ' 1...

...NPB hole transport layer adjacent to a blue light emission layer can produce white light **OLED**.

It was found that the thickness of the rubrene yellow doped region of the NPB...

...region of the NPB hole transport layer 341a should be in close contact with the **blue** luminescent layer 342 for obtaining high **efficiency** **white** light producing **OLED** devices as illustrated from the following Example 2.

#### Example 2

OLED Devices G, H, I...region of the Alq electron transport layer 343a should be in close contact with the **blue** luminescent layer 342 for obtaining high **efficiency** **white** light producing **OLED** devices. This is illustrated by the following Example 4.

#### Example 4

OLED devices S to...

9/3,K/8 (Item 8 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
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01294378

**Electroluminescent vehicle lamp**  
**Elektrolumineszenzlampe fur Kraftfahrzeuge**  
**Lampe electroluminescente pour vehicule**

PATENT ASSIGNEE:

OSRAM SYLVANIA INC., (286495), 100 Endicott Street, Danvers, MA 01923,  
(US), (Applicant designated States: all)

INVENTOR:

Chipalkatti, Makarand H., 6 Fiske Road, Lexington, Massachusetts 02420,  
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Laski, Joseph J., 109 Collincote Street, Stoneham, Massachusetts 02180,

(US)

Meyer, William E., 173 Bedford Road, Lincoln, Massachusetts 01773, (US)  
Trickett, Elizabeth A., 17 Orchard Road, Gloucester, Massachusetts  
01930-4228, (US)

LEGAL REPRESENTATIVE:

Pokorny, Gerd et al (153531), OSRAM GmbH, Postfach 22 16 34, 80506  
Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 1110816 A2 010627 (Basic)  
EP 1110816 A3 020918

APPLICATION (CC, No, Date): EP 2000124583 001110;

PRIORITY (CC, No, Date): US 470305 991222

DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; TR

EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI

INTERNATIONAL PATENT CLASS: B60Q-001/26; H05B-033/00; H05B-033/02;  
H05B-033/12; B60Q-001/32

ABSTRACT WORD COUNT: 208

NOTE:

Figure number on first page: 1

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200126	1680
SPEC A	(English)	200126	6462
Total word count - document A			8142
Total word count - document B			0
Total word count - documents A + B			8142

...SPECIFICATION would be that of the vehicle paint.

While virtually all colors have been shown using **organic EL** materials, the integration of any two differently color EL layers 56 into a single voltage...

...matrix where alternate pixels belong to one color group or the other. Alternatively, the different **color** devices can be integrated in a **more** continuous design. The **greater** portion of lamp area is reserved for the **red**, **white** or amber device and the luminance from the secondary color is enough to camouflage the...

...or the color tunability that organic materials have shown.

Alternatively, it has been shown that **organic EL** devices can be constructed with two or more different color emitters which can be selected...

9/3,K/9 (Item 9 from file: 348)

DIALOG(R) File 348:EUROPEAN PATENTS

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01284707

ORGANIC ELECTROLUMINESCENT ELEMENT

ELEKTROLUMINESZIERENDE, ORGANISCHE VORRICHTUNG

ELEMENT ELECTROLUMINESCENT ORGANIQUE

PATENT ASSIGNEE:

IDEMITSU KOSAN COMPANY LIMITED, (420820), 1-1, Marunouchi 3-chome  
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INVENTOR:

TAGAMI, Sanae, 13-13, Aobadai 3-chome, Ichihara-shi, Chiba, (JP)  
IKEDA, Hidetsugu, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)

HOSOKAWA, Chishio, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
ARAKANE, Takashi, 1280, kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
LEGAL REPRESENTATIVE:  
Gille Hrabal Struck Neidlein Prop Roos (100973), Patentanwalte,  
Brucknerstrasse 20, 40593 Dusseldorf, (DE)  
PATENT (CC, No, Kind, Date): EP 1138745 A1 011004 (Basic)  
WO 200123497 010405  
APPLICATION (CC, No, Date): EP 2000962882 000927; WO 2000JP6658 000927  
PRIORITY (CC, No, Date): JP 99279462 990930  
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE  
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI  
INTERNATIONAL PATENT CLASS: C09K-011/06; C07C-013/62; C07C-211/61;  
C07C-217/92; C07C-217/94; C07C-229/74; C07C-255/58; C07D-295/12;  
C07D-219/14; C07D-223/26; C07D-223/14; C07D-221/18; C07D-279/24;  
H05B-033/14; H05B-033/22  
ABSTRACT WORD COUNT: 75

NOTE:

Figure number on first page: NONE

LANGUAGE (Publication,Procedural,Application): English; English; Japanese  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200140	1016
SPEC A	(English)	200140	8654
Total word count - document A			9670
Total word count - document B			0
Total word count - documents A + B			9670

...SPECIFICATION the life caused by quenching can be prevented by the multi-layer structure of the **organic EL**. Where necessary, light emitting materials, other doping materials, hole injecting materials and electron injecting materials may be used in combination. By using other doping materials, the luminance and the **efficiency** of light emission can be improved and **red** light and **white** light can be emitted. The hole injecting layer, the light emitting layer and the electron...

9/3,K/10 (Item 10 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
(c) 2003 European Patent Office. All rts. reserv.

01284706

**ORGANIC ELECTROLUMINESCENT ELEMENT**  
**ORGANISCHE ELEKTROLUMINESZENTE VORRICHTUNG**  
**ELEMENT ELECTROLUMINESCENT ORGANIQUE**

PATENT ASSIGNEE:

Idemitsu Kosan Co., Ltd., (2464680), 1-1 Marunouchi 3-chome, Chiyoda-ku,  
Tokyo 100-0005, (JP); (Applicant designated States: all)

INVENTOR:

IKEDA, Hidetsugu, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
KOGA, Hidetoshi, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205, (JP)  
YANAGISAWA, Yoshinori, 1280, Kamiizumi, Sodegaura-shi, Chiba 299-0205,  
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TAGAMI, Sanae, 13-13, Aobadai 3-chome, Ichihara-shi, Chiba, (JP)

LEGAL REPRESENTATIVE:

Gille Hrabal Struck Neidlein Prop Roos (100973), Patentanwalte,  
Brucknerstrasse 20, 40593 Dusseldorf, (DE)  
PATENT (CC, No, Kind, Date): EP 1138744 A1 011004 (Basic)  
WO 200123496 010405  
APPLICATION (CC, No, Date): EP 2000962881 000927; WO 2000JP6657 000927

PRIORITY (CC, No, Date): JP 99279463 990930  
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE  
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI  
INTERNATIONAL PATENT CLASS: C09K-011/06; C07C-015/56; C07C-211/56;  
H05B-033/14  
ABSTRACT WORD COUNT: 175

LANGUAGE (Publication,Procedural,Application): English; English; Japanese  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200140	610
SPEC A	(English)	200140	5768
Total word count - document A			6378
Total word count - document B			0
Total word count - documents A + B			6378

...SPECIFICATION the life caused by quenching can be prevented by the multi-layer structure of the **organic EL**. Where necessary, light emitting materials, other doping materials, hole injecting materials and electron injecting materials may be used in combination. By using other doping materials, the luminance and the **efficiency** of light emission can be improved and **red** light and **white** light can be emitted. The hole injecting layer, the light emitting layer and the electron...

9/3,K/11 (Item 11 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
(c) 2003 European Patent Office. All rts. reserv.

00975407  
Color conversion material, and organic electroluminescent color display using the same  
Farbwandlungsmaterial und organisches Elektrolumineszenz-Farbdisplay damit  
Materiau de conversion de couleur et panneau d'affichage electroluminescent en couleurs en matiere organique l'utilisant

PATENT ASSIGNEE:  
TDK Corporation, (224165), 13-1, Nihonbashi 1-chome, Chuo-ku, Tokyo, (JP)  
, (applicant designated states:  
AT;BE;CH;CY;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)

INVENTOR:  
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Inoue, Tetsushi, c/o TDK Corporation, 13-1, Nihonbashi 1-chome, Chuo-ku, Tokyo, (JP)  
Ebisawa, Akira, c/o TDK Corporation, 13-1, Nihonbashi 1-chome, Chuo-ku, Tokyo, (JP)  
Nakano, Mutsuko, c/o TDK Corporation, 13-1, Nihonbashi 1-chome, Chuo-ku, Tokyo, (JP)

LEGAL REPRESENTATIVE:  
Wise, Stephen James et al (46012), c/o RAWORTH, MOSS & COOK, Raworth House, 36 Sydenham Road, Croydon, Surrey CR0 2EF, (GB)  
PATENT (CC, No, Kind, Date): EP 884370 A2 981216 (Basic)

EP 884370 A3 990721  
APPLICATION (CC, No, Date): EP 98304391 980603;  
PRIORITY (CC, No, Date): JP 97166627 970609  
DESIGNATED STATES: DE; FR; GB; NL  
INTERNATIONAL PATENT CLASS: C09K-011/02; H05B-033/14; C09K-011/06;  
ABSTRACT WORD COUNT: 78

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9851	250
SPEC A	(English)	9851	5664
Total word count - document A			5914
Total word count - document B			0
Total word count - documents A + B			5914

...SPECIFICATION a problem that no high precision display device is achieved.

Another possible approach employs an **organic EL** material emitting white light in combination with a color filter, thereby obtaining red, green, and **blue** light emissions. Never until now, however, is any **organic EL** material emitting **white** light by itself with high light emission **efficiency** known. **White** light may be obtained by allowing **organic EL** materials corresponding to **red**, green, and blue to give out light. However, this requires a complicated arrangement, and is not a technically realistic option. Here consider a supposed case where **organic EL** materials corresponding to red, green, and blue are allowed to emit light. Since the materials...

9/3,K/12 (Item 12 from file: 348)  
DIALOG(R)File 348:EUROPEAN PATENTS  
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00723304

Article comprising a microcavity light source  
Gegenstand mit Mikrohohlraum-Lichtquelle  
Article avec une source luminescente a microcavite  
PATENT ASSIGNEE:

AT&T Corp., (589370), 32 Avenue of the Americas, New York, NY 10013-2412,  
(US), (applicant designated states: DE;FR;GB)

INVENTOR:

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(US)  
Miller, Timothy Mark, 2 Delwick Lane, New Providence, New Jersey 07974,  
(US)

LEGAL REPRESENTATIVE:

Watts, Christopher Malcolm Kelway, Dr. (37391), Lucent Technologies (UK)  
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PATENT (CC, No, Kind, Date): EP 683623 A1 951122 (Basic)  
EP 683623 B1 990721

APPLICATION (CC, No, Date): EP 95303140 950510;

PRIORITY (CC, No, Date): US 246439 940520

DESIGNATED STATES: DE; FR; GB

INTERNATIONAL PATENT CLASS: H05B-033/12; H05B-033/22;

ABSTRACT WORD COUNT: 132

LANGUAGE (Publication,Procedural,Application): English; English; English  
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	9929	589
CLAIMS B	(German)	9929	550
CLAIMS B	(French)	9929	684
SPEC B	(English)	9929	2990
Total word count - document A			0
Total word count - document B			4813

Total word count - documents A + B 4813

...ABSTRACT including two spaced apart reflectors (11, 16) that define the cavity, with a layer of **organic** (**electroluminescent**) material (15) disposed between the reflectors. We have discovered that a microcavity can simultaneously emit radiation of two or **more** predetermined colors such that the emission has a desired apparent **color**, exemplarily **white**. Emission of two or **more** colors requires that the **effective** optical length of the cavity is selected such that the cavity is a multimode cavity...

9/3,K/13 (Item 13 from file: 348)  
DIALOG(R) File 348:EUROPEAN PATENTS  
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00532353

**Organic electroluminescent multicolor image display device**  
**Organische elektrolumineszierende Mehrfarbbildanzeigevorrichtung**  
**Dispositif d'affichage electroluminescent organique a image multicolore**  
PATENT ASSIGNEE:

EASTMAN KODAK COMPANY, (201214), 343 State Street, Rochester, New York  
14650-2201, (US), (applicant designated states: BE;DE;FR;GB;NL)

INVENTOR:

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Chang, Jack Che-Man, c/o EASTMAN KODAK COMPANY, Patent Legal Staff, 343  
State Street, Rochester, New York 14650-2201, (US)

LEGAL REPRESENTATIVE:

Brandes, Jurgan, Dr. (2386), Wuesthoff & Wuesthoff Patent- und  
Rechtsanwalte Schweigerstrasse 2, 81541 Munchen, (DE)

PATENT (CC, No, Kind, Date): EP 550063 A2 930707 (Basic)  
EP 550063 A3 940126  
EP 550063 B1 970212

APPLICATION (CC, No, Date): EP 92122113 921229;

PRIORITY (CC, No, Date): US 814553 911230

DESIGNATED STATES (Pub A): AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LI;  
LU; MC; NL; PT; SE; (Pub B): BE; DE; FR; GB; NL

INTERNATIONAL PATENT CLASS: H05B-033/14; H05B-033/26; C09K-011/06;

ABSTRACT WORD COUNT: 175

LANGUAGE (Publication,Procedural,Application): English; English; English

FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPAB97	1226
CLAIMS B	(German)	EPAB97	1340
CLAIMS B	(French)	EPAB97	1319
SPEC B	(English)	EPAB97	10756

Total word count - document A 0

Total word count - document B 14641

Total word count - documents A + B 14641

...SPECIFICATION avoid the degradation of efficiency and stability  
resulting from post deposition patterning procedures.

The multicolor **organic electroluminescent** image display devices of  
the invention are also **more efficient** than devices that emit **white**  
light and depend on a patterned **color** filter array for a multicolor  
imaging capability. Assuming an ideal system in which white light...

...color filter array absent. In other words, superimposing a multicolor image display capability on a **white** emitter by the use of a **color** filter array reduces emission **efficiency** by two thirds in an ideal system. In actual implementation emission of uniform intensity throughout

9/3,K/14 (Item 14 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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01038093

IMAGE TRANSFER ELEMENT, LASER ASSEMBLAGE AND PROCESS FOR THERMAL IMAGING  
ELEMENT DE TRANSFERT D'IMAGE, ASSEMBLAGE LASER ET PROCEDE D'IMAGERIE  
THERMIQUE

Patent Applicant/Assignee:

E I DU PONT DE NEMOURS AND COMPANY, 1007 Market Street, Wilmington, DE  
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except: US)

Patent Applicant/Inventor:

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Legal Representative:

SINNOTT Jessica M (agent), E.I. du Pont de Nemours and Company, Legal  
Patent Records Center, 4417 Lancaster Pike, Wilmington, DE 19805, US,  
Patent and Priority Information (Country, Number, Date):

Patent: WO 200366339 A1 20030814 (WO 0366339)

Application: WO 2003US3432 20030204 (PCT/WO US0303432)

Priority Application: US 2002354633 20020206

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU  
CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO  
RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW  
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LU MC NL PT SE SI  
SK TR

(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG

(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW

(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 17099

Fulltext Availability:

Detailed Description

Detailed Description

... be used in

displays such as flat panel displays, liquid crystal displays, displays  
illuminated by **organic light - emitting diodes**, and displays  
illuminated by  
plasma processes. Displays may display one (monochrome) or **more**  
colors (e.g. **red**, **green**, and **blue**) including **white**, black, and  
greys.

The objects patterned



9/3,K/15 (Item 15 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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01029473

**WHITE LIGHT EMITTING OLEDs FROM COMBINED MONOMER AND AGGREGATE EMISSION  
DISPOSITIFS OLED EMETTANT UNE LUMIERE BLANCHE RESULTANT D'UNE EMISSION  
COMBINEE PAR UN AGREGAT ET UN MONOMERE**

**Patent Applicant/Assignee:**

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THE UNIVERSITY OF SOUTHERN CALIFORNIA, 3716 South Hope Street, Suite 313,  
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**Legal Representative:**

MEAGHER Thomas F (et al) (agent), Kenyon & Kenyon, One Broadway, New  
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**Patent and Priority Information (Country, Number, Date):**

Patent: WO 200359015 A1 20030717 (WO 0359015)  
Application: WO 2002US41578 20021226 (PCT/WO US0241578)  
Priority Application: US 2001344133 20011228; US 2002112257 20020329; US  
2002368496 20020329

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU  
CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO  
RU SC SD SE SG SK SL TJ TM TN TR TT TZ UA UG UZ VC VN YU ZA ZM ZW  
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SI SK  
TR  
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 14174

**Fulltext Availability:**

Detailed Description

**Detailed Description**

... are doped into a single emissive layer. This allows the construction  
of simple, bright and **efficient** WOLEDs that exhibit a high **color**  
rendering index. Among methods for producing **white** light,  
electrophosphorescence is preferred as the most **effective** mechanism for  
**OLED** light emission due to its demonstrated potential for achieving 1  
00% internal quantum efficiency. Surprisingly...to the carbazole unit  
itself (e.g. 4' positions in the Compound 1) will generally **lower** the  
triplet energy, making the mCP derivative **less** suitable for **blue** or  
**white** devices.

41 4' (1)

2

4 4'

4 6

24

Substitution of phenyl or poly...

9/3,K/16 (Item 16 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00995979 \*\*Image available\*\*

**ORGANIC LIGHT EMITTING DIODE LIGHT SOURCE**  
**SOURCE LUMINEUSE A DIODE ELECTROLUMINESCENTE ORGANIQUE**

Patent Applicant/Assignee:

OSRAM OPTO SEMICONDUCTORS GMBH, Wernerwerkstr. 2, 93049 Regensburg, DE,  
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Inventor(s):

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Legal Representative:

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Patent and Priority Information (Country, Number, Date):

Patent: WO 200326012 A2-A3 20030327 (WO 0326012)

Application: WO 2002EP10551 20020919 (PCT/WO EP0210551)

Priority Application: US 2001955617 20010919

Designated States: CN JP

(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR

Publication Language: English

Filing Language: English

Fulltext Word Count: 3127

Fulltext Availability:

Detailed Description

Detailed Description

... anode (cathode).

0 Furthermore this method of making white light allows the use of optimum  
OLED structures of different colors to mix these with various current  
densities to get the desired color hue (whites of different temperature  
may be a choice) having the most optimized efficiency. This approach of  
achieving an emission color, for example white, based on individually  
patterned and efficiency-optimized separate 1 5 colors (such as RGB),  
allows for a higher overall light source efficiency than the  
efficiency achieved by fabricating a white-emitting OLED stripe or  
segment. In particular, each RGB individual segment can be held at its  
own optimized voltage (for light output and efficiency), for each color  
respectively, to optimize the overall OLED light source output and  
efficiency.

2 0

Figure 2 is a top view of an...

9/3,K/17 (Item 17 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00959829 \*\*Image available\*\*

**HIGH EFFICIENCY MULTI-COLOR ELECTRO-PHOSPHORESCENT OLEDs**  
**DIODES ORGANIQUES ELECTROLUMINESCENTES (OLED) ELECTROPHOSPHORESCENTES A**  
**COULEURS MULTIPLES HAUTE EFFICACITE**

Patent Applicant/Assignee:

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Inventor(s):

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FORREST Stephen R, 148 Hunt Drive, Princeton, NJ 08540, US,

Legal Representative:

MEAGHER Thomas F (et al) (agent), Kenyon & Kenyon, One Broadway, New  
York, NY 10004, US,

Patent and Priority Information (Country, Number, Date):

Patent: WO 200291814 A2-A3 20021121 (WO 0291814)  
Application: WO 2002US14956 20020513 (PCT/WO US0214956)  
Priority Application: US 2001291496 20010516

Designated States: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU

CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP  
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO  
RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW  
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR  
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG  
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW  
(EA) AM AZ BY KG KZ MD RU TJ TM

Publication Language: English

Filing Language: English

Fulltext Word Count: 11702

Fulltext Availability:

Detailed Description

Detailed Description

... Another object of the present invention is to provide a multi-emissive layer is electrophosphorescent **OLED** that can take advantage of the diffusion of triplet excitons to produce bright **white** devices with high power and- quantum **efficiencies** . The device **color** can be tuned by varying the thickness and the ...that the excitons can diffuse throughout the luminescent region, 2 0 producing the desired output **color** balance.

An emissive region with two or **more** phosphorescent dopants can be tuned to produce any **color** of light, including **white** light. The low cost, high **efficiency** and brightness of such a **white** -light **OLED** make it suitable for use as backlight for a typical liquid crystal display, as a ...

...lighting in a home or office, or for a thin, flexible monochrome display. A monochrome **OLED** could be developed that would achieve a distinctive color for advertising purposes. A transparent, color-selectable **OLED** could be used as one of the **OLEDs** in a fiallcolor display having several stacked, individually addressable **organic light emitting devices** , providing a method for achieving an inexpensive but efficient full-color organic display or 3...

9/3,K/18 (Item 18 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

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00551404 \*\*Image available\*\*

FABRICATION METHOD FOR HIGH RESOLUTION FULL COLOR ORGANIC LED DISPLAYS

PROCEDE DE FABRICATION D'ECRANS ORGANIQUES A DIODES LUMINESCENTES, COULEUR

PURE ET HAUTE RESOLUTION

Patent Applicant/Assignee:

FED CORPORATION, .  
Inventor(s):  
SOKOLIK Igor,  
GHOSH Amalkumar P,  
Patent and Priority Information (Country, Number, Date):  
Patent: WO 200014777 A1 20000316 (WO 0014777)  
Application: WO 99US20107 19990903 (PCT/WO US9920107)  
Priority Application: US 9899294 19980904  
Designated States: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
Publication Language: English  
Fulltext Word Count: 6821

Fulltext Availability:  
Detailed Description

Detailed Description

... may be used. This introduces potential hydrolysis and oxidation of organic OLED materials.

For color OLED displays, the two former approaches are technologically more feasible because all pixels emit the same...

...CCM and/or color filters can be patterned independently and then aligned on top of OLED pixels. The display design that uses blue color monochrome pixelated display with CCM (and, possibly...

...it uses blue monochrome display thus eliminating problem of differential aging of phosphor components; b) blue light absorbed by the CCM media and re-emitted with high quantum efficiency of luminescence can provide higher display brightness than white display with color filters; (c) thin films of highly absorbing CCM can be evaporated directly on top of...

9/3,K/19 (Item 19 from file: 349)  
DIALOG(R) File 349:PCT FULLTEXT  
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00500389 \*\*Image available\*\*  
COMPOUND-METAL CONTACTS FOR ORGANIC DEVICES AND METHOD FOR MAKING THE SAME  
CONTACTS EN COMPOSES METALLIQUES POUR DES COMPOSANTS ORGANIQUES ET LEUR  
PROCEDE DE FABRICATION

Patent Applicant/Assignee:  
INTERNATIONAL BUSINESS MACHINES CORPORATION,  
Inventor(s):  
KIEWRA Edward W,  
ROENTGEN Peter,  
SEIDLER Paul F,  
Patent and Priority Information (Country, Number, Date):  
Patent: WO 9931741 A1 19990624  
Application: WO 97IB1565 19971215 (PCT/WO IB9701565)  
Priority Application: WO 97IB1565 19971215  
Designated States: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
Publication Language: English  
Fulltext Word Count: 5265

Fulltext Availability:  
Detailed Description

Detailed Description

... devices are not shown in Figure 3).

On top of the Si integrated circuits, stable OLED anodes 32 (e.g. ITO, Au, Pt, Ni, Cr) are patterned. These anodes, together with...

...The cross-section of Figure 3 shows two adjacent OLEDs. These OLEDs may emit any color including blue or white.

More details of the array 30 are given in the following. The substrate 31 may be...

9/3,K/20 (Item 20 from file: 349)  
DIALOG(R)File 349:PCT FULLTEXT  
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00406306 \*\*Image available\*\*  
GALLIUM NITRIDE ANODES FOR ORGANIC ELECTROLUMINESCENT DEVICES AND DISPLAYS  
ANODES AU NITRURE DE GALLIUM POUR AFFICHAGES ET DISPOSITIFS ORGANIQUES  
ELECTROLUMINESCENTS

Patent Applicant/Assignee:

INTERNATIONAL BUSINESS MACHINES CORPORATION,  
EASTMAN KODAK COMPANY,  
STRITE Samuel Clagett,  
TANG Ching Wan,

Inventor(s):

STRITE Samuel Clagett,  
TANG Ching Wan,

Patent and Priority Information (Country, Number, Date):

Patent: WO 9747051 A1 19971211

Application: WO 97IB559 19970516 (PCT/WO IB9700559)

Priority Application: WO 96IB557 19960605

Designated States: BR CA CN JP KR US AT BE CH DE DK ES FI FR GB GR IE IT LU  
MC NL PT SE

Publication Language: English

Fulltext Word Count: 7693

Fulltext Availability:

Detailed Description

Detailed Description

... anode 113 is provided. It is to be noted that 25 no details of the OLED (s) are shown for sake of simplicity, but the OILED may be blue, white or any other color. Blue light may be desirable because it can be converted to red and green light efficiently by patterned organic dyes to achieve full color. White light may be desirable because it can be passed through a color filter array to...

?

File 2:INSPEC 1969-2003/Nov W2  
(c) 2003 Institution of Electrical Engineers  
File 6:NTIS 1964-2003/Nov W3  
(c) 2003 NTIS, Intl Cpyrght All Rights Res  
File 8:Ei Compendex(R) 1970-2003/Nov W2  
(c) 2003 Elsevier Eng. Info. Inc.  
File 34:SciSearch(R) Cited Ref Sci 1990-2003/Nov W3  
(c) 2003 Inst for Sci Info  
File 35:Dissertation Abs Online 1861-2003/Oct  
(c) 2003 ProQuest Info&Learning  
File 62:SPIN(R) 1975-2003/Oct W1  
(c) 2003 American Institute of Physics  
File 65:Inside Conferences 1993-2003/Nov W3  
(c) 2003 BLDSC all rts. reserv.  
File 94:JICST-EPlus 1985-2003/Nov W3  
(c) 2003 Japan Science and Tech Corp (JST)  
File 95:TEME-Technology & Management 1989-2003/Nov W1  
(c) 2003 FIZ TECHNIK  
File 99:Wilson Appl. Sci & Tech Abs 1983-2003/Oct  
(c) 2003 The HW Wilson Co.  
File 144:Pascal 1973-2003/Nov W2  
(c) 2003 INIST/CNRS  
File 233:Internet & Personal Comp. Abs. 1981-2003/Jul  
(c) 2003, EBSCO Pub.  
File 239:Mathsci 1940-2003/Dec  
(c) 2003 American Mathematical Society  
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec  
(c) 1998 Inst for Sci Info  
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13  
(c) 2002 The Gale Group  
File 603:Newspaper Abstracts 1984-1988  
(c) 2001 ProQuest Info&Learning  
File 483:Newspaper Abs Daily 1986-2003/Nov 18  
(c) 2003 ProQuest Info&Learning  
File 248:PIRA 1975-2003/Nov W2  
(c) 2003 Pira International  
File 103:Energy SciTec 1974-2003/Nov B1  
(c) 2003 Contains copyrighted material  
? ds

Set	Items	Description
S1	886	AU=(KIDO J? OR KIDO, J?)
S2	21673	AU=(KIMURA M? OR KIMURA, M?)
S3	9986	AU=(NAGAI, K? OR NAGAI K?)
S4	29753	(S1 OR S2 OR S3) NOT PY>2001
S5	14219	OLED OR ORGANIC(W) (LED OR LIGHT()EMIT?() (DEVICE? ? OR DIOD- E? ?) OR ELECTROLUMINESC? OR ELECTRO()LUMINESC? OR EL)
S6	498	S4 AND S5
S7	24	S6 AND WHITE AND (COLOR OR COLOUR OR RED OR GREEN OR BLUE - OR RED()BLUE()GREEN OR RGB)
S8	14	RD S7 (unique items)

8/3,K/1 (Item 1 from file: 2)  
DIALOG(R) File 2:INSPEC  
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

5450393 INSPEC Abstract Number: B9701-4260-009

**Title:** Organic electroluminescent device: current status and future prospect

**Author(s):** Kido, J.  
**Author Affiliation:** Graduate Sch. of Eng., Yamagata Univ., Japan  
**Conference Title:** 1996. 54th Annual Device Research Conference Digest (Cat. No.96TH8193) p.6-7  
**Publisher:** IEEE, New York, NY, USA  
**Publication Date:** 1996 **Country of Publication:** USA 202 pp.  
**ISBN:** 0 7803 3358 6 **Material Identity Number:** XX96-02784  
**Conference Title:** 1996 54th Annual Device Research Conference Digest  
**Conference Sponsor:** IEEE Electron Devices Soc  
**Conference Date:** 24-26 June 1996 **Conference Location:** Santa Barbara, CA, USA  
**Language:** English  
**Subfile:** B  
**Copyright** 1996, IEE

**Title:** Organic electroluminescent device: current status and future prospect

**Author(s):** Kido, J.  
...Abstract: devices, materials are vacuum deposited and made into multilayer structure to achieve high efficiencies. Emission color of the device depends on the materials used as the emitter layer, and three primary colors of blue, green and red can be obtained at high brightness levels. Emission with very sharp spectral bands can be obtained by using lanthanide complexes and white light by combining several fluorescent dyes.

**Identifiers:** organic electroluminescent devices...

...emission color ;

8/3,K/2 (Item 2 from file: 2)  
DIALOG(R) File 2:INSPEC  
(c) 2003 Institution of Electrical Engineers. All rts. reserv.

5100938 INSPEC Abstract Number: B9512-4260D-018

**Title:** Single-layer white light-emitting organic electroluminescent devices based on dye-dispersed poly(N-vinylcarbazole)

**Author(s):** Kido, J. ; Shionoya, H. ; Nagai, K.  
**Author Affiliation:** Dept. of Mater. Sci. & Eng., Yamagata Univ., Japan  
**Journal:** Applied Physics Letters vol.67, no.16 p.2281-3  
**Publication Date:** 16 Oct. 1995 **Country of Publication:** USA  
**CODEN:** APPLAB **ISSN:** 0003-6951  
**U.S. Copyright Clearance Center Code:** 0003-6951/95/67(16)/2281/3/\$6.00  
**Language:** English  
**Subfile:** B  
**Copyright** 1995, IEE

**Title:** Single-layer white light-emitting organic electroluminescent devices based on dye-dispersed poly(N-vinylcarbazole)

**Author(s):** Kido, J. ; Shionoya, H. ; Nagai, K.  
**Abstract:** Bright single-layer white light-emitting organic electroluminescent devices were developed by using dye-dispersed poly(N-vinylcarbazole) (PVK). The active layer consists...

... emission colors, were dispersed as emitting centers. By adjusting the concentration of the fluorescent dyes, white light with a maximum luminescence of 4100 cd/m/sup 2/ was obtained, which is the brightest white light ever observed for organic electroluminescent devices.

Descriptors: colour ;

Identifiers: single-layer white light-emitting organic electroluminescent devices...

...bright single-layer white light-emitting organic electroluminescent devices...

... organic electroluminescent devices

8/3,K/3 (Item 3 from file: 2)

DIALOG(R) File 2:INSPEC

(c) 2003 Institution of Electrical Engineers. All rts. reserv.

4922178 INSPEC Abstract Number: B9505-4260D-016

Title: Multilayer white light-emitting organic electroluminescent device

Author(s): Kido, J. ; Kimura, M. ; Nagai, K.

Author Affiliation: Dept. of Mater. Sci. & Eng., Yamagata Univ., Yonezawa, Japan

Journal: Science vol.267, no.5202 p.1332-4

Publication Date: 3 March 1995 Country of Publication: USA

CODEN: SCIEAS ISSN: 0036-8075

U.S. Copyright Clearance Center Code: 0036-8075/95/\$1.00+.10

Language: English

Subfile: B

Copyright 1995, IEE

Title: Multilayer white light-emitting organic electroluminescent device

Author(s): Kido, J. ; Kimura, M. ; Nagai, K.

Abstract: Organic electroluminescent devices are light-emitting diodes in which the active materials consist entirely of organic materials. Here, the fabrication of a white light-emitting organic electroluminescent device made from vacuum-deposited organic thin films is reported. In this device, three emitter layers with different carrier transport properties, each emitting blue, green, or red light, are used to generate white light. Bright white light, over 2000 candelas per square meter, nearly as bright as a fluorescent lamp, was...

...space shuttles. Other uses are a backlight for liquid crystal display as well as full color displays, achieved by combining the emitters with micropatterned color filters.

Identifiers: organic electroluminescent device...

... white light emission...

...micropatterned color filters

8/3,K/4 (Item 4 from file: 2)

DIALOG(R) File 2:INSPEC

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4625916 INSPEC Abstract Number: A9409-4282-003, B9405-4260-001



**Title:** White light-emitting organic electroluminescent devices using the poly(N-vinylcarbazole) emitter layer doped with three fluorescent dyes

**Author(s):** Kido, J. ; Hongawa, K.; Okuyama, K.; Nagai, K.

**Author Affiliation:** Dept. of Mater. Sci. and Eng., Yamagata Univ., Japan

**Journal:** Applied Physics Letters vol.64, no.7 p.815-17

**Publication Date:** 14 Feb. 1994 **Country of Publication:** USA

**CODEN:** APPLAB **ISSN:** 0003-6951

**U.S. Copyright Clearance Center Code:** 0003-6951/94/64(7)/815/3/\$6.00

**Language:** English

**Subfile:** A B

**Title:** White light-emitting organic electroluminescent devices using the poly(N-vinylcarbazole) emitter layer doped with three fluorescent dyes

**Author(s):** Kido, J. ; Hongawa, K.; Okuyama, K.; Nagai, K.

**Abstract:** White light-emitting electroluminescent devices were fabricated using poly(N-vinylcarbazole) (PVK) as a hole-transporting...

...as an electron transport layer. The PVK layer was doped with fluorescent dyes such as blue -emitting 1,1,4,4-tetraphenyl-1,3-butadiene, green -emitting coumarin 6, and orange-emitting DCM 1. A cell structure of glass substrate/indium-tin-oxide/doped PVK/TAZ/Alq/Mg:Ag was employed. White emission covering a wide range of the visible region and a high luminance of 3400...

**Identifiers:** white light-emitting organic electroluminescent devices...

... blue -emitting...

... green -emitting

8/3,K/5 (Item 1 from file: 8)

DIALOG(R) File 8: Ei Compendex(R)

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06239711 E.I. No: EIP02517279433

**Title:** High efficiency white organic electroluminescent devices

**Author:** Kishigami, Yasuhisa; Tsubaki, Kenji; Kondo, Yukihiro; Kido, Junji

**Corporate Source:** Grad. Sch. of Sci. and Engineering Yamagata University, Yonezawa, Yamagata 992-8510, Japan

**Conference Title:** Asia Display/IDW 2001

**Conference Location:** Nagoya, Japan **Conference Date:** 20021016-20021019

**E.I. Conference No.:** 60357

**Source:** SID Conference Record of the International Display Research Conference 2001. p 549-552

**Publication Year:** 2001

**ISSN:** 1083-1312

**Language:** English

**Title:** High efficiency white organic electroluminescent devices

**Author:** Kishigami, Yasuhisa; Tsubaki, Kenji; Kondo, Yukihiro; Kido, Junji

**Abstract:** In this paper, we present high efficiency white organic electroluminescent devices (OELDs) having a metal-doped electron injection layer at the interface between the cathode...

...with carbazolyl groups/ 4,7- diphenyl-1,10- phenanthroline (Bphen) doped with Cs / Al. The white EL devices exhibited low drive voltages and, hence, high luminous efficiencies compared to the devices...

...8%. To our knowledge, these luminous and quantum efficiencies are the highest values reported for white organic EL devices. 9 Refs.

Identifiers: Color filters

8/3,K/6 (Item 2 from file: 8)  
DIALOG(R)File 8: Ei Compendex(R)  
(c) 2003 Elsevier Eng. Info. Inc. All rts. reserv.

04484460 E.I. No: EIP96083297931

Title: White -light-emitting organic electroluminescent devices

Author: Kido, Junji ; Shionoya, Hidehiko; Nagai, Katsutoshi

Corporate Source: Yamagata Univ, Yamagata, Jpn

Conference Title: Proceedings of the 1996 IS&T 49th Annual Conference

Conference Location: Minneapolis, MN, USA Conference Date:

19960519-19960524

E.I. Conference No.: 45197

Source: Proceedings of the IS&T Annual Conference 1996. Soc Imaging Sci Technol, Springfield, VA, USA. p 385-387

Publication Year: 1996

CODEN: 002422

Language: English

Title: White -light-emitting organic electroluminescent devices

Author: Kido, Junji ; Shionoya, Hidehiko; Nagai, Katsutoshi

Abstract: White -light-emitting organic electroluminescent (EL) devices were fabricated by using dye-dispersed polymers as emitter layers. In these devices, several fluorescent dyes were used as emitting centers to generate white light. A device with dye-dispersed poly(N-vinylcarbazole) exhibited white light with a maximum luminance of 4100 cd/m\*\*2. (Author abstract) 5 Refs.

Descriptors: Luminescent devices; Light emitting diodes; Organic polymers ; Color ; Dyes; Electroluminescence; Electrodes; Molecular structure; Ionization; Energy gap

Identifiers: Polyvinylcarbonate; White light; Luminance; Electronic absorption spectra; Carrier recombination efficiency; Dye dispersed polymers

8/3,K/7 (Item 1 from file: 34)  
DIALOG(R)File 34: SciSearch(R) Cited Ref Sci  
(c) 2003 Inst for Sci Info. All rts. reserv.

06281867 Genuine Article#: BJ87B No. References: 29

Title: Aromatic-amine-containing polymers for organic electroluminescent devices

Author(s): Kido J (REPRINT) ; Harada G; Komada M; Shionoya H; Nagai K

Corporate Source: YAMAGATA UNIV, GRAD SCH ENGN, DEPT MAT SCI &

ENGN/YONEZAWA/YAMAGATA 992/JAPAN/ (REPRINT)

, 1997, V672, P381-394

ISSN: 0097-6156 Publication date: 19970000

Publisher: AMER CHEMICAL SOC, 1155 SIXTEENTH ST NW, WASHINGTON, DC 20036ACS SYMPOSIUM SERIES

Series: ACS SYMPOSIUM SERIES

Language: English Document Type: REVIEW (ABSTRACT AVAILABLE)

Title: Aromatic-amine-containing polymers for organic electroluminescent devices

Author(s): Kido J (REPRINT) ; Harada G; Komada M; Shionoya H; Nagai K

Abstract: We investigated the suitability of aromatic amine-containing

polymers as active layers in **organic electroluminescent** devices. Polymers used in this study include poly(N-vinylcarbazole) (PVK), poly(N-substituted methacrylamide)...  
...devices using the polymer hole transport layer. Single-layer devices with dye-dispersed PVK emitted **white** light with a luminance of over 4000 cd/m<sup>2</sup>. This demonstrates that dye-dispersed polymer systems are quite useful to obtain **white** light.  
Research Fronts: 95-0201 003 ( **BLUE** ELECTROLUMINESCENT MATERIALS IN POLYMER LIGHT-EMITTING-DIODES; ORGANIC SUPERLATTICE STRUCTURE UTILIZING ORGANIC FLUORESCENT MOLECULES)

8/3,K/8 (Item 2 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
(c) 2003 Inst for Sci Info. All rts. reserv.

04765577 Genuine Article#: UF787 No. References: 16  
Title: **WHITE -LIGHT-EMITTING ORGANIC ELECTROLUMINESCENT DEVICE USING LANTHANIDE COMPLEXES**  
Author(s): KIDO J ; IKEDA W; KIMURA M ; NAGAI K  
Corporate Source: YAMAGATA UNIV,DEPT MAT SCI & ENGN/YONEZAWA/YAMAGATA 992/JAPAN/  
Journal: JAPANESE JOURNAL OF APPLIED PHYSICS PART 2-LETTERS, 1996, V35, N3B (MAR 15), PL394-L396  
ISSN: 0021-4922  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: **WHITE -LIGHT-EMITTING ORGANIC ELECTROLUMINESCENT DEVICE USING LANTHANIDE COMPLEXES**  
Author(s): KIDO J ; IKEDA W; KIMURA M ; NAGAI K  
Abstract: **White** -light-emitting **organic electroluminescent** devices with multilayer structures were fabricated using lanthanide metal complexes as the emitter layers. A...

...Tb(III))/europium complex (tris(dibenzoylmethanato) (monophenanthroline)Eu(III))/aluminum complex (Alq)Mg:Ag exhibited **white** electroluminescence. The spectrum consisted of three discrete peaks at 410-420 nm, 545 nm, and...  
Research Fronts: 94-0169 001 (POLYMER LIGHT-EMITTING-DIODES; EFFICIENT **BLUE** ELECTROLUMINESCENCE; AROMATIC DIAMINE; ORGANIC MATERIALS; PHOTOLUMINESCENCE OF POLY(P-PHENYLENEVINYLENE))

8/3,K/9 (Item 3 from file: 34)  
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci  
(c) 2003 Inst for Sci Info. All rts. reserv.

03383986 Genuine Article#: PA532 No. References: 21  
Title: **CHARGE-TRANSPORT POLYMERS FOR ORGANIC ELECTROLUMINESCENT DEVICES**  
Author(s): KIDO J ; HONGAWA K; NAGAI K ; OKUYAMA K  
Corporate Source: YAMAGATA UNIV,DEPT MAT SCI & ENGN/YONEZAWA/YAMAGATA 992/JAPAN/; YAMAGATA UNIV,DEPT ELECT & INFORMAT ENGN/YONEZAWA/YAMAGATA 992/JAPAN/  
Journal: MACROMOLECULAR SYMPOSIA, 1994, V84, JUL (JUL), P81-90  
ISSN: 1022-1360  
Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: **CHARGE-TRANSPORT POLYMERS FOR ORGANIC ELECTROLUMINESCENT DEVICES**  
Author(s): KIDO J ; HONGAWA K; NAGAI K ; OKUYAMA K  
Abstract: Triple-layer-type **organic electroluminescent** devices were

fabricated using charge-transporting poly(N-vinylcarbazole) (PVK) as a hole-transporting emitter...

...a structure of glass substrate/indium-tin-oxide/PVK/TAZ/Alq/Mg:Ag showed bright **blue** emission from the PVK layer with a luminance of over 700 cd/m<sup>2</sup>. The emission **color** was tuned to a desirable **color** in the visible region through doping the PVK layer with fluorescent dyes. Bright **white** emission, in particular, was obtained for the first time at a high luminance level of over 3000 cd/m<sup>2</sup> by using three kinds of fluorescent dyes each emitting **red**, **green** or **blue**.

8/3,K/10 (Item 1 from file: 94)  
DIALOG(R) File 94:JICST-EPlus  
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03503194 JICST ACCESSION NUMBER: 97A0929924 FILE SEGMENT: JICST-E  
Organic electroluminescent **element**. ( **Optoelectronic Industry and Technology Development Assoc. S** ).

KIDO JUNJI (1)  
(1) Yamagata Univ.  
Oputo Nyuzu(OPTO News), 1997, VOL.1997,NO.5, PAGE.17-18, FIG.2, REF.10  
JOURNAL NUMBER: J0738AAH  
UNIVERSAL DECIMAL CLASSIFICATION: 621.385:621.397  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Commentary  
MEDIA TYPE: Printed Publication

Organic electroluminescent **element**. ( **Optoelectronic Industry and Technology Development Assoc. S** ). ...

KIDO JUNJI (1)  
...ABSTRACT: element was outlined by materials. This element has a high degree of freedom for luminescent **color**, can give the **white** light emission, and has no dependence on visibility. It has the life on the practical...  
...monochromatic passive matrix displays using low-molecular pigment vapor deposition elements between 1997 and 1998. **Color** products were announced by several companies. Elements using polymer can be produced by coating, that...  
...elements of the latter using poly(N-vinylcarbazole) as a luminous layer are reported, and **blue**, **green**, **red** and **white** light emission are available. The polychroming is also reported by various methods, and full **color** display is possible.  
...DESCRIPTORS: **color** display

8/3,K/11 (Item 2 from file: 94)  
DIALOG(R) File 94:JICST-EPlus  
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03391974 JICST ACCESSION NUMBER: 97A0987352 FILE SEGMENT: JICST-E  
**Future of Organic EL Display Technologies. Recent Progress in White -Light-Emitting Organic EL Devices and Polymer EL Devices.**

KIDO JUNJI (1)  
(1) Yamagata Univ., Grad. Sch.  
Nippon Insatsu Gakkaishi(Bulletin of the Japanese Society of Printing Science and Technology), 1997, VOL.34,NO.4, PAGE.248-253, FIG.5, REF.21

JOURNAL NUMBER: G0233ABD ISSN NO: 0914-3319  
UNIVERSAL DECIMAL CLASSIFICATION: 681.327.2  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Commentary  
MEDIA TYPE: Printed Publication

**Future of Organic EL Display Technologies. Recent Progress in White  
-Light-Emitting Organic EL Devices and Polymer EL Devices.**

KIDO JUNJI (1)

ABSTRACT: In this article, **white** -light-emitting EL devices and polymer-based EL devices will be reported. Several **white** EL devices having different device architectures are discussed. Materials used for **white** EL devices include small molecules as well as polymers. In cases of small molecules, **white** light is generated by stacking several organic layers with different emission colors. In contrast, several fluorescent dyes are doped into a polymer emitter layer in case of polymer-based **white** EL devices. Three kinds of multicolor devices are introduced, which include **white** EL devices with **color** filters. Other multicolor devices are so-called "side-by-side" structure and **blue** EL with **color** conversion layers. Novel methods for the fabrication of side-by-side devices using polymers are...

8/3,K/12 (Item 3 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
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02541449 JICST ACCESSION NUMBER: 95A0532890 FILE SEGMENT: JICST-E  
Organic Electroluminescent Devices Using Lanthanide Complexes. (II).  
KIDO JUNJI (1); IKEDA WATARU (1); KIMURA MASATO (1); NAGAI KATSUTOSHI  
(1)

(1) Yamagata Univ., Fac. of Eng.  
Kidorui(Rare Earths), 1995, NO.26, PAGE.110-111, FIG.4, REF.4  
JOURNAL NUMBER: L0027AAK ISSN NO: 0910-2205 CODEN: KIDOE  
UNIVERSAL DECIMAL CLASSIFICATION: 546.63/.66+546.79!-386 621.383:535.35  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Conference Proceeding  
ARTICLE TYPE: Original paper  
MEDIA TYPE: Printed Publication

Organic Electroluminescent Devices Using Lanthanide Complexes. (II).  
KIDO JUNJI (1); IKEDA WATARU (1); KIMURA MASATO (1); NAGAI KATSUTOSHI  
(1)

ABSTRACT: **Organic electroluminescent** devices were fabricated using lanthanide complexes as an emitter layer. Multilayer devices having a structure of ITO/triphenyldiamine derivative(TPD)/lanthanide complex /aluminum complex/Mg:Ag were employed. **Red** light was observed from a Eu complex-based device, and bluish **green** light from a Tb complex-based device. When Eu complex and Tb complex were used together, the output became **white** having emission from TPD, Tb complex and Eu complex. (author abst.)

8/3,K/13 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
(c) 2003 INIST/CNRS. All rts. reserv.

13474061 PASCAL No.: 98-0171108  
**Characteristics of organic electroluminescent devices with new**

**dopants**

SATO Y; OGATA T; ICHINOSAWA S; MURATA Y  
TSUTSUI T, ed; KIDO J, ed  
Yokohama Research Center, Mitsubishi Chemical Corp., 1000, Kamoshida,  
Aoba-ku, Yokohama 227, Japan  
Department of Materials Science and Technology, Graduate School of  
Engineering Sciences, Kyushu University, Kasuga, Fukuoka 816, Japan  
New Energy and Industrial Technology Development Organization (NEDO).  
International Joint Research Programme. "Organic Electroluminescence"  
Research Group, Japan.  
International Conference on Electroluminescence of Molecular Materials  
and Related Phenomena (Fukuoka JPN) 1997-05-21  
Journal: Synthetic metals, 1997, 91 (1-3) 103-107  
Language: English

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**Characteristics of organic electroluminescent devices with new dopants**

TSUTSUI T, ed; KIDO J, ed  
We conducted an investigation of electroluminescent (EL) characteristics  
of the **organic EL** devices with new dopants 5,12-diphenyl-tetracene (DPT)  
and benzothioxanthene (BTX) derivatives. The **organic EL** cell  
doped with DPT showed a **green** emission with high **color** purity and also  
good operational stability. Concentration quenching was found out to be  
more severe...

... both in the electron-transporting layer and in the hole-transporting  
layer. We demonstrated a **white** emission by the combination of an  
orange-emitting hole transport layer and a **blue** -emitting layer.

8/3,K/14 (Item 2 from file: 144)  
DIALOG(R) File 144:Pascal  
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12015886 PASCAL No.: 95-0207655  
**Multilayer white light-emitting organic electroluminescent device**  
KIDO J; KIMURA M; NAGAI K  
Yamagata univ., dep. materials sci. eng., Yamagata 992, Japan  
Journal: Science : (Washington, DC), 1995, 267 (5202) 1332-1334  
Language: English

**Multilayer white light-emitting organic electroluminescent device**  
KIDO J; KIMURA M; NAGAI K  
**Organic electroluminescent** devices are light-emitting diodes in which  
the active materials consist entirely of organic materials. Here, the  
fabrication of a **white** light-emitting **organic electroluminescent**  
device made from vacuum-deposited organic thin films is reported. In this  
device, three emitter layers with different carrier transport properties,  
each emitting **blue**, **green**, or **red** light, are used to generate **white**  
light. Bright **white** light, over 2000 candelas per square meter, nearly  
as bright as a fluorescent lamp, was...

...space shuttles. Other uses are a backlight for liquid crystal display as  
well as full **color** displays, achieved by combining the emitters with  
micropatterned **color** filters  
English Descriptors: Electroluminescent device; Thin film; Organic material  
; Display; Liquid crystals; Flat screen; **White** light; **Color** display;  
Luminance